REMARKS/ARGUMENTS

Support for new claims 107-109, 121-123, 134-136, 137-139, and 151-153 includes page 20, lines 16-25, and page 28, line 10, to page 30, line 2, of the Specification.

The Examiner rejects claims 68-70 under 35 U.S.C.§112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which the applicant regards as the invention. In light of the cancellation of claims 68-70, this rejection is now moot.

The Examiner rejects claims 1-96 under 35 U.S.C.§103(a) as being unpatentable over U.S. Patent 5,903,641 to Tonisson.

In light of the cancellation of claims 1-96, this rejection is now moot.

Applicant has added new claims 97-164. Applicant believes that the claims are allowable over Tonisson. Tonisson fails to teach or suggest at least the following italicized features of the newly added independent claims:

> 97. A method for determining if a first agent should service work items of a first work type in a work processing facility, comprising:
>
> (a) an agent assignor selecting the first agent, *wherein the first work type and/or a selected work item in the first work type has an associated first dynamic preference value* and the first agent has an associated first agent preference value and first agent threshold value for the first work type and *wherein the first dynamic preference value reflects the work processing facility's preference for processing of work items of the first work type in comparison to processing work items of work types other than the first work type;*
>
> (b) *the agent assignor determining, as a function of the first dynamic preference and first agent preference values, a first agent composite preference value for the first work type;*
>
> (c) *the agent assignor comparing the first agent composite preference value with the first agent threshold value, wherein the first agent threshold value measures the first agent's lack of proficiency in servicing the first work type and/or selected work item in the first work type;*
>
> (d) *the agent assignor, when the first agent composite preference value exceeds the first agent threshold value, finding the first agent to the qualified to service the first work type;* and

(e) *the agent assignor, when the first agent composite preference value is less than the first agent threshold value, finding the first agent to be unqualified to service the first work type.*

111. A system for determining whether a first agent should service work items of a first work type in a work processing facility, comprising:

agent assigning means for (a) selecting the first agent, *wherein the first work type and/or a selected work item in the first work type has an associated first dynamic preference value* and the first agent has an associated first agent preference value and first agent threshold value for the first work type and *wherein the first dynamic preference value reflects the work processing facility's preference for processing of work items of the first work type in comparison to processing work items of work types other than the first work type;* (b) *determining, as a function of the first dynamic preference and first agent preference values, a first agent composite preference value for the first work type;* (c) *comparing the first agent composite preference value with the first agent threshold value, wherein the first agent threshold value measures the first agent's lack of proficiency in servicing the first work type and/or selected work item in the first work type;* (d) *when the first agent composite preference value exceeds the first agent threshold value, finding the first agent to the qualified to service the first work type;* and (e) *when the first agent composite preference value is less than the first agent threshold value, finding the first agent to be unqualified to service the first work type.*

124. A system for determining whether a first agent should service work items of a first work type in a work processing facility, comprising:

an agent assignor operable to (a) select the first agent, *wherein the first work type and/or a selected work item in the first work type has an associated first dynamic preference value* and the first agent has an associated first agent preference value and first agent threshold value for the first work type and *wherein the first dynamic preference value reflects the work processing facility's preference for processing of work items of the first work type in comparison to processing work items of work types other than the first work type;* (b) *determine, as a function of the first dynamic preference and first agent preference values, a first agent composite preference value for the first work type;* (c) *compare the first agent composite preference value with the first agent threshold value, wherein the first agent threshold value measures the first agent's lack of proficiency in servicing the first work type and/or selected work item in the first work type;* (d) *when the first agent composite preference value exceeds the first agent threshold value, find the first agent to the qualified to service the first work type;* and (e) *when the first agent composite preference value is less than the first agent threshold value, find the first agent to be unqualified to service the first work type.*

137. A method for servicing work items in a contact center, comprising:

(a) selecting a first agent and a first work type and/or a first work item of the first work type;

(b) *determining a state of the contact center;*

(c) *based on the determined state of the contact center, selecting a composite preference value function from among a plurality of differing composite preference value functions, each composite preference value function being a function of a dynamic preference value and an agent preference value;*

(d) *determining a composite preference value using the selected composite preference value function*, wherein the *determined composite preference value* is associated with at least one of (i) the first work type, (ii) the first agent, and (iii) the first work item; and

(e) *based on the determined composite preference value,* assigning the first agent to service contacts of the first work type and/or the first work item.

151. A contact center, comprising:

a preference evaluator operable to determine and select a state of the contact center from among a plurality of differing contact center states and, based on the selected state of the contact center, select a composite preference value function from among a plurality of differing composite preference value functions, each composite preference value function being a function of a dynamic preference value and an agent preference value; and

an agent assignor operable to select a first agent and a first work type and/or a first work item of the first work type, *determine a composite preference value using the selected composite preference value function,* and, *based on the determined composite preference value*, assign the first agent to service contacts of the first work type and/or the first work item, wherein the determined composite preference value is associated with at least one of (i) the first work type, (ii) the first agent, and (iii) the first work item.

U.S. Patent 5,903,641 (which corresponds to EP 855,826) to Tonisson is directed to an agent vector 150 having two components, namely an optimization function that calculates the optimum proportions of agent skill assignments and a call distribution or agent-vectoring algorithm that distributes calls to agents in the optimum proportions. The inputs to the linear optimization algorithm include a set of levels of priority, or expertise, in each skill for each agent, which represent a value for each agent taking calls in a particular skill. Other inputs to the linear optimization algorithm include the volume of calls arriving and the capacity of an agent to handle calls for a skill. The model does not directly take into account other measures of performance, such as oldest call waiting times, service levels, or queue lengths as these measures are related to the ratio of the volume of calls coming into a skill and the capacity of the call center to handle calls in each skill. Once the optimum proportions for allocation of agents to

skills have been calculated, calls must be distributed to agents so that the call loads match the desired proportions. This can be achieved by storing the percentage of time spent by each agent handling calls in each skill in the last X minutes and distributing calls to agents in such a way as to bring the percentages closer to the optimum percentages. There is no provision made to use differing optimization functions for differing contact center states.

In one configuration, the vector 150 selects an agent having an actual distribution for a selected skill and an optimum distribution for the selected skill. The vector 150 compares the actual skill distribution with the optimum skill distribution to determine if the actual proportion of work that the selected agent spends handling calls for the selected skill exceeds the optimum. When the actual proportion exceeds the optimum work proportion, vector 150 logs the selected agent into the selected skill (if that has not already been done). Thereafter or if it is determined that the actual work proportion does not exceed the optimum work proportion, the vector 150 determines if the optimum proportion of work that the selected agent spends handling calls for the selected skill exceeds the actual proportion of work that the selected agent spends handling calls for the selected skill. If the optimum work proportion exceeds the actual work proportion, vector 150 logs the agent into the skill (if it has not already been done). Thereafter or if is determined that the optimum work proportion does not exceed the actual work proportion, the agent selects a next skill for the agent for optimization.

Tonisson fails to teach removing an agent from an agent queue based on the value of the composite preference value. Tonisson, at col.4, lines 18-21, teaches that "[a]gents 106-108 who are available for handling calls are assigned by agent vector 150 to agent queues 131-139 *based upon the skills which they possess*." (Emphasis supplied.) Moreover, Tonisson states, at col. 9, line 67, to col. 10, line 6, that the agent vector 150 logs the agent into each of the agent's skills at the corresponding level of expertise, uses call center parameter values to perform the benefit-

optimization function on the predetermined call center performance characteristic to obtain the optimum proportion of work that each agent spends handling calls for each agent and each skill (col. 10, lines 25-32), adjusts each agents' call-handling priorities to bring the actual work proportions more in line with the optimum work proportions for each skill, and only logs an agent out of a skill when an agent logs off at an agent position 102-104 (col. 10, lines 1-5). The linear optimization algorithm thus calculates the proportions of calls of differing types or skills that are distributed to each multi-skilled agent assigned to a plurality of different agent queues or skills. At col. 11, lines 13-18, Tonisson further states:

> In this simplified arrangement, agents are *pre-assigned* to all the skills that they have been trained to handle, but only the skills in which they are scheduled to work are given high preference (expertise) levels, meaning that under normal circumstances they only handle calls from their scheduled skills. Their other, backup, skills have low preference levels, and only come into effect when there is a service level emergency.

In other words, Tonisson teaches that an agent is *always* assigned to the same agent queue but that the percentages of the calls he handles that are serviced by the various agent queues to which he is assigned are varied depending on an optimum percentage of calls for each skill of the agent.

In contrast, certain embodiments of the present invention teach the use of a composite preference value to determine whether the agent is qualified or unqualified to handle certain types of calls. Dependent claims 103, 117, 130, 147, and 161, in fact, state that the agent is removed from an agent queue when he is deemed to be unqualified to handle calls of the corresponding skill and added to an agent queue when he is deemed to be qualified to handle calls of the corresponding skill.

With further reference to Tonisson, the Examiner nonetheless contends that the "optimum agent allocation" corresponds to the agent composite preference value, the "skills" to the agent preference value, the agent threshold value to the percent split of call types actually given to the agent, and the "call center performance parameters" to the "dynamic preference value." The

Examiner further relies on col. 11 for the teaching that "call center performance parameters" includes, *inter alia*, call priorities, the time that each call has been in queue, and a predicted time that each call will be in queue. We disagree.

The linear optimization algorithm of Tonisson has no analog to the dynamic preference value. Tonisson specifically states that the linear optimization algorithm does not directly take into account other measures of performance such as oldest call waiting times, average speed of answer, service levels or queue lengths because these measures can all be viewed as indicators of the percentage of utilization of the resources available for handling calls in a given skill. (Col. 5, lines 37-45, and col. 7, lines 38-55.) Dependent claims 99, 113, 126, 143, and 157 have been amended to include only these items. Although waiting times are mentioned at col. 11, the queue waiting times are not mentioned as part of the linear optimization function but as part of a "simplified arrangement". The "simplified arrangement" does not seek optimization "under normal conditions" but only "when there is a service level emergency." It is not clear from the Specification of Tonisson how the "simplified arrangement" will work, particularly when one conisders that the linear optimization function specifically teaches no analog to the dynamic preference value.

Moreover, even under the Examiner's construction Tonisson falls short. The claims require the agent assignor to compare the first agent composite preference value with the first agent threshold value. The Examiner states that the optimum agent allocation of Tonisson is equivalent to the claimed agent composite preference value and that the actual percent split of call types given to the agent is equivalent to the claimed agent threshold value. However, claims 97, 111, and 124 require the first agent threshold value to measure the first agent's lack of proficiency in servicing the first work type and/or selected work item in the first work type.

Tonisson further fails to teach or suggest independent claims 137 and 151, which require the selection of a composite preference value function from among a plurality of differing composite preference value functions based on the determined state of the contact center. This limitation is also contained in dependent claims 107-109, 121-123, and 134-136.

Accordingly, the claims are allowable.

The dependent claims provide further bases for allowability.

By way of example, dependent claims 102, 116, 129, 146, and 160 require the agent preference value to be a function of the personal desirability of the first agent for servicing the first work type. Such an agent preference value is neither taught nor suggested by Tonisson.

Applicant wishes to clarify the intended meaning of certain claim language in light of the Federal Circuit decision "SuperGuide Corporation v. DirecTV Enterprises, Inc., et al., 358 F.3d 870 (Fed. Cir. 2004). In that decision, the Federal Circuit held, under the unique facts of that case, that the phrase "at least one of a desired program start time, a desired program end time, a desired program service, and a desired program type" means "at least one of a desired program start time, at least one of a desired program end time, at least one of a desired program service, and at least one of a desired program type".

Applicant has used the phrases "at least one of . . . and", "one or more of . . . and", and "and/or" in a number of claims and wishes to clarify to the Examiner the proper construction of this phrase. Applicant intended the phrases "at least one . . and", "one or more of . . . and", and "and/or" as used in the claims to be an open-ended expression that is both conjunctive and disjunctive in operation. For example, the expressions "at least one of A, B and C", "one or more of A, B, and C", and "A, B, and/or C" mean A alone, B alone, C alone, A and B together, A and C together, B and C together, or A, B and C together. If the Examiner disagrees with this

construction, Applicant respectfully requests that the Examiner notify Applicant accordingly so that Applicant can further amend the claims.

Based upon the foregoing, Applicants believe that all pending claims are in condition for allowance and such disposition is respectfully requested. In the event that a telephone conversation would further prosecution and/or expedite allowance, the Examiner is invited to contact the undersigned.

Respectfully submitted,

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